Attachment B

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Implementation of the Local	)	**CC Docket No. 96-98**
Competition Provisions of the	)	
Telecommunications Act of 1996	)	

DECLARATION OF EDWIN A. FLEMING ON BEHALF OF WORLDCOM, INC.

1. My name is Edwin A. Fleming. My business address is One Tower Lane, Suite 1600, Oakbrook Terrace, IL 60181. I have a Bachelor of Science degree in Business and am a Certified Public Accountant.

2. I am employed by WorldCom, Inc. (WorldCom), and I serve as a Senior Manager of Strategic Business Planning. My responsibilities include evaluating and managing building additions to WorldCom's local network and planning local network expansions.

I. Purpose and Summary

3. The purpose of this declaration is to describe the process that WorldCom uses to extend its local network to additional buildings or to additional LEC central offices. I also discuss the analysis contained in the Reply Declaration of Robert

W. Crandall (Crandall Declaration), filed on April 30, 2001 with the Reply Comments of the United States Telecom Association (USTA).

4. In Parts II and III below, I show that the construction of high-capacity loop and transport facilities is time-consuming and requires significant levels of capital investment. In Part IV below, I show that the Crandall Declaration underestimates the cost of extending a CLEC network to a new building.

II. The "Building Add" Process

5. The "building add" process involves the construction of a "lateral" from an existing WorldCom local network to a new customer building. In some cases, especially if the lateral is short or mainly traverses private property, the lateral may consist of only a single path. But for customers whose requirements demand a high level of reliability, and for longer laterals that primarily use streets or other public rights-of-way (where there is a higher risk of cable cuts), WorldCom often uses "diverse routing," i.e., two separate paths, between the WorldCom ring and the customer building.

6. If the building in question is more than a mile from WorldCom's local network, it is not evaluated using the building add process. Buildings that are more than a mile from the existing ring would only be added as part of new subnetwork construction, which is typically a multimillion dollar project.

7. The addition of a building to WorldCom's local network incurs outside plant costs (including rights-of-way, trenching, labor, and conduits and fiber); the cost of building access (including the building access agreement and the cost of preparing

the "POP space"); and the cost of transmission electronics at the customer premises and at WorldCom's local network node.

8. Building adds are extremely expensive. The cost of WorldCom's recent building adds, most of which have involved short laterals of a few hundred feet or less, has averaged $250,000.

9. Building adds are also time-consuming. Building adds generally take between six to nine months, but can often take substantially longer. In general, the most time consuming part of the process is not the construction itself, but the negotiation of rights-of-way and building access agreements

10. If projected WorldCom customer demand in a building is a DS-3 or less, the building is generally not even considered for a building add. In WorldCom's experience, it is more cost-effective to serve customers in these buildings using ILEC special access services. For larger buildings where WorldCom projects WorldCom customer demand of several DS-3s or optical level circuits, the building add decision is made using a screening process that compares projected revenues to the cost of the building add and that also takes into account the risk that revenues will be lower than projected. Because building adds are so expensive, WorldCom is able to add only a limited number of buildings to its local network each year.

III. Construction of Transport Facilities

11. When WorldCom extends its network to an additional ILEC central office, it uses a diversely-routed architecture, constructing a ring that connects existing

WorldCom network facilities to the ILEC central office. Because WorldCom uses a diversely-routed architecture, the trenching that is required will be substantially greater than the line-of-sight distance between existing network facilities and the ILEC central office.

12. Adding a central office to WorldCom's network incurs outside plant costs (including rights-of-way, trenching, and conduits and fiber); the cost of collocation; and the cost of transmission electronics at the customer premises and at WorldCom's local network node.

13. The extension of WorldCom's local network to an ILEC central office is extremely expensive. In WorldCom's experience, the extension of WorldCom's local network to an ILEC central office generally incurs an expenditure of at least $1 million, even for a central office that is close to existing WorldCom network facilities.

14. In most cases, however, costs are substantially higher. Typically, the extension of WorldCom's local network to an ILEC central office requires several miles of outside plant construction, at a cost of between $200,000 and $400,000 or more per mile. For example, I estimate that the extension of WorldCom's local network to the two largest "offnet" central offices in Seattle would require 7.5 miles and 7.0 miles of outside plant construction.

IV. Crandall Declaration

15. I have been asked to review the Crandall Declaration and the associated cost study prepared by the Cambridge Strategic Management Group (CSMG). I have the following observations.

16. First, CSMG inappropriately assumes that the length of the lateral is equal to the shortest path between the CLEC network and the target building. As I discuss above, laterals are often diversely-routed. Where diverse routing is used, WorldCom local network engineers assume, as a rule of thumb, that the length of the lateral will be 2.5 times the "line-of-sight" distance.

17. Even if diverse routing is not required, it is unrealistic to assume that the length of the lateral will be equal to the "line-of-sight" distance. Streets and other available rights-of-way rarely follow the shortest path. By failing to recognize this constraint, CSMG has underestimated the outside plant construction cost by a significant amount.

18. Second, CSMG appears to have underestimated the trenching costs. While CSMG's estimate of $17 to $30 per foot is perhaps a reasonable estimate of trenching costs for a "building add" in suburban areas, trenching costs in the central business district of major cities are often much higher, at least $70 to $100 per foot. Costs are higher in these areas because trenching requires digging up and then repairing streets and sidewalks.

19. Third, the CLEC network maps appear to be inaccurate. To the extent that I can discern the claimed path of WorldCom's network on the maps in the Crandall

Declaration, it appears that some of the routes shown on the map include WorldCom conduit that is generally not used for its local network; include long haul fiber routes; or are otherwise inaccurate. Because Worldcom's long haul network is designed for transport between cites, the use of a small section of the fiber pair for a building addition generally makes the remainder of that fiber pair running between the cities unusable. Accordingly, the use of long haul fiber for building additions is normally not economically feasible. In addition, WorldCom's long haul fiber routes often do not even have spare fibers that could be used for building adds. As a result, WorldCom rarely extends fiber from its long haul network to customer buildings.

20. Fourth, I note that the costs of outside plant construction in the six cities studied in the Crandall Declaration are substantially lower than construction costs in top-10 MSAs such as New York, Washington, DC, Los Angeles, and San Francisco.

Declaration

I declare under penalty of perjury that the foregoing is true and correct.

Executed on June 11, 2001.

/s/ Edwin A. Fleming
Edwin A. Fleming

Attachment C

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147

DECLARATION OF IAN T. GRAHAM
ON BEHALF OF WORLDCOM, INC.

1. My name is Ian T. Graham and I am Executive Director, WorldCom OnNet DSL. In this role, I have operational responsibility for executing WorldCom's facilities-based DSL strategy, which is largely centered around WorldCom's acquisition of certain DSL network assets of Rhythms NetConnections ("Rhythms"). Before this, I held the positions of Senior Director and Director of Global Capacity Acquisition for WorldCom and its UUNET affiliate. Part of my responsibilities in those positions involved managing the company's relationships with Covad Communications, Rhythms, and NorthPoint Communications, which were then the three major national competitive providers of DSL services. In addition, I worked closely with Product Management and other business units on the company's efforts

to obtain arrangements with each of the Regional Bell Operating Companies ("BOCs") for the resale of DSL.

2. The purpose of my declaration is to explain WorldCom's current DSL strategy and its evolution, and to demonstrate that this strategy is dependent on the continued availability of unbundled network elements ("UNEs") from the BOCs. If WorldCom is denied access to select UNEs necessary for the provision of DSL services, this will result in a growing customer base (*i.e.,* small to medium sized businesses, enterprise customers and independent Internet Service Providers ("ISPs")) being deprived of the benefits of cost-effective high-speed access, all because the BOCs have ignored this customer segment in developing their DSL offerings.

The Business Case for DSL

3. DSL has a number of features that make it a more attractive access solution than a dial-up connection or a high capacity leased line (*e.g.*, T1) for a broad variety of customers. First, unlike dial-up, DSL can be provided at a variety of speeds, each of which can be made available at different price points. With DSL, customers can tailor their bandwidth purchase to their specific needs. Second, the terminating equipment and local transport facilities required for DSL are generally much less expensive than those required for high-capacity leased line services, such as a T1 or fractional T1 (frame relay) service. Third, DSL, particularly ADSL service using line-sharing, can be provisioned more quickly than high-capacity leased service, because, in most cases, the installation of the customer premise equipment ("CPE") can be handled by end users, most of whom are not specially trained in computer or information technologies. This helps lower the cost of installing the

service relative to high-capacity service options. Finally, in its various flavors and options, DSL is flexible enough to meet the broadband access requirements of most small/medium businesses, enterprise teleworkers, and end users of ISPs. Customers upgrading dial-up connections to DSL generally experience a significant and satisfactory decrease in the amount of time it takes to download information.

4. Because of these features, DSL is an attractive access solution for four main customer segments. First, retail, end-user customers that use the Internet frequently, or that use it for Internet-enabled applications such as online entertainment, file-sharing, and digital picture and video presentation, are buying DSL as a "dial upgrade."

5. Second, small and medium sized businesses can use DSL to access the Internet for document sharing, online research (such as Lexis.com), online procurement, email, and other collaborative online business applications (such as Web-based video conferencing or net-meetings). These business customers often cannot afford the costs associated with a high-capacity leased line, but at the same time cannot afford the application unresponsiveness associated with performing these functions over a dial-up connection. DSL is the perfect solution for their needs because it provides them with the amount of bandwidth they need but at a cost less than a high-capacity leased line.

6. The third segment is the enterprise segment. Large Fortune-500 companies find DSL to be a cost-effective way of connecting many different retail or distribution points (such as gas stations or fast-food restaurants) to a private corporate network. These companies may use DSL services to connect nodes on a private

corporate network using traditional data networking protocols, such as frame relay or ATM services, or using newer IP virtual private networking ("IP VPN") protocols. In addition, these companies are increasingly turning to DSL as an access solution for remote work and telecommuting solutions in which the company buys the employee's DSL line at home or reimburses the employee for the costs of such service.

7. Finally, independent ISPs have found DSL to be an excellent delivery mechanism for Web content and other ISP services such as Web hosting, email, news, information, online photo albums, online scheduling services, online auctions, and a broad variety of other applications.

8. As described in more detail below, of these four customer segments, the BOCs have targeted the first at the expense of the other three.

WorldCom's DSL Product Offerings

9. WorldCom currently offers a variety of DSL products: Enterprise DSL ("EDSL"), Internet DSL ("BDSL"), Private Label DSL—Access Edition ("PLDSLA") and Private Label DSL—Internet Edition ("PLDSLI"). WorldCom's OnNet DSL products support a broad range of applications including Internet, frame relay, ATM and virtual private networks ("VPNs"). As discussed below, the various product features have evolved somewhat over time as the means through which WorldCom provided such services have changed.

10. ***Enterprise DSL***: EDSL is used to provide frame relay, ATM and other data services to small and medium sized businesses and to enterprise customers with a requirement for many, dispersed, faster-than-dial data service connections (such as gas stations, retail chains and franchises). EDSL includes symmetric

bandwidth for upstream and downstream traffic, multiple static Internet protocol addresses ("IP addresses"), routers for use as CPE, domain name ("DNS") hosting and a variety of access speeds, depending on the application, ranging from 128 kbps (kilobits per second) up to 7.0 Mbps (megabits per second), WorldCom currently offers a Service Level Agreement ("SLA") to its customers to cover network service up to the demarcation point between the BOC copper loop and the WorldCom facilities-based DSL network. There is a strong demand from WorldCom's customers for business-grade (T1 equivalent) service level guarantees that extend through the BOC copper loop, but WorldCom has been unable to offer such enhanced SLA coverage for the copper loop portion of the Enterprise DSL service because the BOCs have refused to provide business-grade mean time to repair and other service guarantees for their xDSL UNEs. WorldCom has been asking for such improved last-mile SLAs from the BOCs for the unbundled network elements for 2 years.

11. ***Internet DSL***: BDSL is an Internet access product that WorldCom sells to two types of customers: Solo and Office. The Solo BDSL product is for a single user, and is primarily targeted to sole proprietorships, home offices, and enterprise customers wishing to purchase teleworker DSL connections for employees to use as a remote work location. It provides asymmetric bandwidth, two static IP addresses, and bridges for CPE. The use of static IP addresses distinguishes this product from traditional BOC retail DSL offerings, which generally use dynamically-assigned IP addresses that are less suitable for business applications and secure networking (VPNs). The Office BDSL product is designed for a small, multi-user location such as a small business or an enterprise location such as a remote sales

office. The Office versions provides symmetric bandwidth in speeds from 128 kbps to 1.0 Mbps, multiple static IP addresses, routers for CPE, DNS hosting, and email accounts.

12. ***Private Label DSL***: Private Label DSL, in both Access and Internet Editions, offers both symmetric and asymmetric bandwidth service that WorldCom sells to enterprise customers in bulk for use as a large-scale remote work or telecommuting solution, and to ISPs, on a wholesale basis, for resale to end users. PLDSL includes a full suite of CPE options from low-end bridges to high-end routers, self-installation and professional installation options, and both dynamic and static IP addressing configurations for the Internet Edition. The difference between the Access and Internet Editions relates to the way in which WorldCom hands off the data traffic to the customer. For the Access Edition, we provide our customer with an aggregated traffic stream at the ATM layer. The customer provides its own IP addressing and Internet access to the end user. For the Internet Edition, we carry the customer's traffic to WorldCom's Internet backbone and route it over the Internet using WorldCom's IP addressing. In both scenarios, the customer manages the – end user relationship (*e.g.*, billing, authentication, technical support) and provides any Internet content (*e.g.*, email, news, Web hosting, portals) or value added services (*e.g.*, VPN, online entertainment servers).

13. These various DSL products are sold on a stand-alone basis, and also are used as building blocks for the virtual private network services, managed private network services, and other value-added services provided by WorldCom.

WorldCom's DSL Build & Resale Strategy

14. WorldCom's strategy for the provision of DSL service has taken different paths and evolved over the past five years. During that time, WorldCom has built a facilities-based DSL network, has resold DSL service provided by competitive DSL providers (*e.g.,* Covad, Rhythms, and NorthPoint), and has tried unsuccessfully to reach sustainable arrangements for the resale of BOC DSL services. Currently, WorldCom's DSL strategy is centered around our facilities-based network and certain DSL network assets that we purchased from Rhythms through its Chapter 11 bankruptcy proceedings at the end of 2001.

WorldCom DSL Build

15. During 2000 and into 2001, we initiated a DSL build in targeted central offices across the United States. We used existing WorldCom collocation arrangements and augmented them to add DSL capability. On average, we incurred non-recurring charges of $50,000 to upgrade each of the collocation spaces and another $80,000 for equipment, configuration, and installation services for the initial build-out, as well as installation and recurring costs for backhaul circuits (ATM transport) to WorldCom's regional aggregation locations. WorldCom equipped approximately 100 central offices with DSL capabilities before stopping this program because of the high deployment costs. At that point, the decision was made to provide DSL services through resale arrangements with data local exchange carriers ("DLECs") such as NorthPoint, Covad and Rhythms, and to explore opportunities to resell BOC DSL service.

DLEC DSL Service

16. Beginning in approximately 1999, WorldCom entered into contracts to resell DSL service offered by the DLECs. WorldCom resold these DSL services as part of both its EDSL and BDSL services. Up until mid-2001, the majority of WorldCom's DSL customers were provisioned on DSL facilities purchased from DLECs.

17. Beginning in early 2000, all three national DLECs began to face financial difficulties that affected their ability to provide service. In January of 2001, Covad announced it was closing 141 central offices. That same month, Rhythms announced it was closing 224 central offices. Covad's closures resulted in service no longer being offered in five metropolitan areas. Rhythms closures caused it to no longer offer service in twenty metropolitan areas. As a result of these closures, WorldCom lost a significant number of active customers. Meanwhile, NorthPoint filed for bankruptcy and ceased providing service in March on virtually no notice. This event stranded thousands of WorldCom DSL customers. During the summer of 2001, Covad and Rhythms each announced their respective filings under Chapter 11 of the bankruptcy code.

18. Despite the difficulties faced by each of these DLECs, all three networks have survived essentially intact and available to provide DSL service going forward. Covad has emerged in a restructured form after eliminating over a billion dollars in debt; AT&T picked up many of the NorthPoint collocations for approximately $135 million; and, as described in more detail below, WorldCom acquired a substantial portion of the Rhythms DSL network assets in the latter half of 2001.

BOC DSL Service

19. Beginning in approximately 2000, WorldCom began exploring the

possibility of reselling BOC DSL service. However, after several years of attempting to secure DSL from the BOCs, this effort has not resulted in any satisfactory business arrangements that would permit WorldCom to utilize BOC-provided DSL services in a cost-effective, large-scale manner to meet its DSL product line requirements. First, the BOCs refused to offer DSL services that met technical and product requirements necessary for WorldCom to provide a business-grade DSL service. Second, the BOCs refused to offer even consumer-grade services on a wholesale basis and on competitive terms. Finally, the BOCs' level of effort in working with WorldCom on the development of a suitable resale product was inconsistent with our goal of bringing a product to market in anything approaching a reasonable time frame. For example, the extravagant systems development costs and continually changing requirements for electronic bonding with BOC OSS systems have forced WorldCom to recently abandon the automation of BOC DSL resale order management and support functions. The BOCs require quarterly OSS upgrades with no guarantees of backward compatibility, which means that associated capital expenditures needed to maintain the OSS links to the BOC systems would have been approximately twice the cost of the underlying DSL loops.

20. From a technical and product perspective, WorldCom required features such as: speeds up to 1.5 Mbps provisioned symmetrically; variable bit rate data handoffs; low over-subscription on backhaul circuits; ATM layer 2 egress to access concentrators; service level agreements for network availability, network latency, data delivery, and mean time to repair; cost-effective pre-qualification and order-management interfaces for DSL; and support for both routed and bridged CPE configurations. As a general matter, the service that WorldCom was offered by the BOCs came with limited

features such as asymmetric bandwidth provisioning; unspecified bit rate; high oversubscription on the backhaul circuits; no quality of service guarantees; and no support for routed CPE configurations.

21. For example, the DSL service offered by Verizon-East (Bell Atlantic) did not provide a separate permanent virtual circuit for each end user location at the ATM (layer 2) handoff to WorldCom, an architecture that prevents WorldCom from performing fundamental network management functions, such as traffic shaping and monitoring. Instead, the Verizon-East DSL service hands all traffic off to WorldCom in one aggregated PVC, which reduces WorldCom's ability to directly support the end-user. WorldCom has conducted numerous successful trials with Verizon-East using Layer Two Tunneling Protocol (L2TP), but Verizon-East has chosen not to implement this in their production environment.

22. In addition, to interface with the BOCs, WorldCom is required to develop different OSS systems for pre-qualification and order management for each BOC region. SBC and Verizon, for example, have failed to fully integrate their legacy DSL OSS systems; therefore, different OSS development is required for each legacy region. The burdens associated with engineering our DSL products around different sets of technical specifications and supporting it through the development and deployment of seven different OSS interfaces are daunting. Molding the different BOC offerings into a single, unified, national DSL product suite is very difficult. In addition, in doing so, WorldCom would have had to engineer our DSL services to the lowest common denominator of service offered by the BOCs, thereby losing the features that make our DSL products attractive to businesses and enterprise teleworkers. These features include: managing

oversubscription and traffic on the network to levels that are suitable for a business-grade DSL product; supporting routed CPE which is commonly used in a multi-user office environment; and offering symmetric bandwidth capabilities for business locations whose usage patterns do not fit those of the typical residential customer.

23. From a contracting perspective, the BOCs refused to offer even their standard consumer-grade product on anything approaching competitive wholesale terms (something which, had it been available, would have been attractive to us to satisfy our ISP customers and possibly remote, single user locations). For example, SBC's DSL affiliate, ASI, included terms in its wholesale tariff that: (1) permitted SBC, without our knowledge or consent, to provide other advanced services to WorldCom's customers over the DSL line paid for by WorldCom; (2) permitted SBC to perform disruptive testing without notice to WorldCom; and (3) gave SBC the ability to change the parameters of the service offered without notice to WorldCom.

24. Even when we managed to reach agreement on the terms of a wholesale tariff, as we did with BellSouth, conflicts arose in the implementation of those arrangements. For example, with BellSouth, we had to work through conflicts between the access service request ("ASR") process and mutually agreed upon IT mechanisms for ordering service.

25. Finally, the process of working with the BOCs took forever. By the end of 2001, we had managed to implement a wholesale arrangement with only BellSouth and Pacific Bell. Development efforts with respect to the other BOC territories were still several months and several million dollars away from completion.

DSL Network Assets

26. By the middle of 2001, it became clear that resale of BOC DSL was not a long-term viable business strategy and would not permit us to sell to our core customer segment—business customers. At the same time, the bankruptcy filing of Rhythms presented an opportunity for WorldCom to buy a fully functioning, relatively new, nationwide DSL network for a fraction of what it would cost to build such a network from scratch.

27. Accordingly, in September of 2001, we bid for and won a substantial portion of the Rhythms nationwide DSL network for approximately $31 million. The Rhythms acquisition allows WorldCom to deliver DSL services through our own facilities in 709 central offices in 31 metropolitan markets. The asset purchase allows us to provide various flavors of DSL, including ADSL, SDSL and IDSL (as well as service upgrades in 2002 to G.SHDSL and other extended reach technologies), and we have the ability to add sufficient capacity to each of the central offices where we are collocated. WorldCom purchased state-of-the-art equipment from Rhythms, including DSLAMs, splitters, metallic loop testers, ATM and IP concentrators, IP routers, ATM switches, and OSS provisioning systems that permit the electronic ordering of xDSL UNEs from all of the BOCs. We selected which assets to purchase based on a variety of factors, including the number of customers served out of those locations, projected growth rates, and synergies with our existing customer base.

28. It is important to note that the DLEC bankruptcies of 2001 have significantly altered the economics of the competitive DSL business. Through the Rhythms acquisition, WorldCom was able to purchase valuable equipment and

operational collocations for a fraction of the actual costs incurred by Rhythms. We also acquired a skilled and experienced employee base knowledgeable of the issues involved in running a facilities-based DSL business. Moreover, via the bankruptcy acquisition, WorldCom was able to significantly optimize the operational costs of running a national DSL network by migrating Rhythms-leased network facilities off of other LECs and onto WorldCom-owned network facilities. Today, almost all of the WorldCom OnNet DSL network (with the notable exception of the UNE copper loops obtained from the BOCs and transport in a few hundred central offices) operates via networking hardware, metro private lines, aggregation hub facilities, and data and Internet backbones that are owned and operated by WorldCom.

29. WorldCom's immediate challenge is to quickly grow our DSL business, utilizing the existing infrastructure put in place by Rhythms. We intend to do so, however, using a business model that is slightly different than the traditional DLEC model. Not only will we offer the traditional layer 2 and layer 3 access services offered by the DLECs and BOCs, but WorldCom can take advantage of the breadth of its product portfolio to use DSL as an access platform for value-added services sold by WorldCom, such as VPNs, IP Comms, and managed private network services using frame relay and ATM. In addition, we can bundle DSL with high-capacity leased lines and roaming dial-up access services to provide enterprise customers with a complete spectrum of access options, whether for Internet access or for use in connecting back to corporate networks.

Our DSL Offering Depends On Access to Select ILEC Facilities

30. WorldCom cannot deliver the innovative DSL-based products it offers today and will offer in the future without access to unbundled network elements from the

BOCs. WorldCom's DSL business requires continued access to local dry copper loops, the high-frequency portion of voice-enabled loops (where voice is provided by either the BOC or a CLEC), high capacity transport out of the BOC central office back to WorldCom metro aggregation facilities, and the associated BOC systems that enable WorldCom to pre-qualify, order, check the status of, and monitor such UNEs.

31. To provide DSL service, WorldCom leases two types of local loops from the BOCs: (a) two-wire dry copper loops, and (b) the high-frequency portion of voice-enabled copper loops where voice service is provided by the BOC or a CLEC (line sharing / line splitting). Both loop types are equally important to our DSL service offerings. Some business customers prefer the security and flexibility of dry copper loops, or require such dedicated connections due to inside wiring issues with their business location, but such loops are more expensive and usually take longer to install because installation activity by both BOC and WorldCom technicians at the customer premises is needed. Because federal and state regulations regarding line splitting have yet to be meaningfully implemented by the BOCs, businesses that use CLEC providers for local voice service have no choice but to purchase dry copper DSL services if they want DSL access to their location. Similarly, where the BOCs have deployed digital loop carrier facilities between the central office and the end user, thereby depriving WorldCom and other DLECs from being able to use the previously existing copper facilities for high-speed SDSL or ADSL services, WorldCom's only DSL access option is a dry copper IDSL service that is limited to 128 kbps throughput.

32. Unlike dedicated loops, line sharing allows DSL to be deployed over the customer's existing voice-enabled copper loop. Typically, ADSL service via line sharing

can be installed more quickly because a technician does not need to be dispatched to the customer premise. In addition, line sharing is often more efficient because it utilizes the existing loop plant and is less expensive to provision.

33. As an adjunct to line sharing, WorldCom also needs the right to engage in line splitting (*i.e.*, sharing of the loop between a competitive voice and data provider, which may or may not be the same company). Particularly in the business market segments, WorldCom is having DSL orders rejected by the BOCs because the BOC is not the local voice provider and refuses to coordinate the high-frequency loop order with the voice CLEC (even though both WorldCom and the voice CLEC are both obtaining access to the copper facilities from the BOC). WorldCom has been pushing the BOCs to implement practical and reasonable measures to allow for line-shared ADSL provisioning over UNE-P services purchased by voice CLECs. To date, the BOCs have demonstrated little willingness to implement such procedures in a timely manner.

34. For dry copper loops and line sharing loops, WorldCom has no choice but to purchase these UNEs from the four BOCs. There is *no* alternative provider available to the CLEC community, nor is it possible or economic for CLECs like WorldCom to duplicate the ILEC copper loop plant that was built on regulated subsidies. It is no secret that the BOCs have control over these last mile copper facilities that connect to our end-user customers. Those facilities have been gradually deployed over the past century and to come even close to duplicating that achievement would take decades and require enormous investment. WorldCom's only means of connecting existing and future DSL customers with our data and IP networks is through leasing these unbundled network elements from the BOCs.

35. In some instances, we are unable to serve certain customers with DSL because the local loop is composed partially of fiber. A significant percentage of our xDSL UNE orders are rejected by the BOCs because of the presence of fiber / digital loop carriers, and this problem will only increase over time as the BOCs "break" the cooper connections between end users and the central offices by expanding their fiber networks deeper into the field. Competitive data LECs, including Rhythms, had been very active in trying to find an industry solution to serving these customers before the BOCs rolled out retail DSL offerings over fiber-fed loops. Unfortunately, FCC inaction on this issue has left the DLEC community in a precarious situation. The BOCs are aggressively rolling out DSL service out of remote terminals and blocking WorldCom from providing SDSL and ADSL services from the central offices, while we wait for regulators to develop rules that allow us to serve these customers via the BOC-deployed fiber facilities. To date, the BOCs are refusing to allow us to access these loops in a competitive fashion. Our hope is that the Commission will resolve the issue consistent with how the Illinois and Wisconsin Commissions and Texas arbitrator have resolved it, so that WorldCom can grow its DSL business by serving these customers with various value-added services that the BOCs do not offer today.

36. In addition to loops, WorldCom purchases UNE transport from the BOCs to connect our collocation arrangements with our data hubs. Where economical, WorldCom builds our own transport to our collocation arrangements. Today, about half of the Rhythms collocation cages that we acquired last year in bankruptcy connect to WorldCom-provided transport. When we purchased the Rhythms assets, one of the first projects we completed was to migrate CO-to-Hub transport over to our own network,

wherever facilities were available. However, there remain a few hundred central offices where we purchase UNE transport from the BOCs because it is not economical for us to build our own fiber transport or it is not feasible to purchase from a third party.

37. To pre-qualify, order, and maintain the DSL loops, we need to interface with the BOCs and access their OSS databases. Without access to the BOC pre-ordering systems, we would not be able to tell whether a particular loop was qualified for DSL. (Currently, their response time and system availability times are less than adequate for WorldCom and its ISP customers.) Nor would we be able to accurately populate an order for a DSL-capable loop without the necessary pre-order information that the BOCs require for submission of a local service request. Like other business segments that use BOC circuits, we rely on the BOCs to update us on the status of our orders by returning timely and accurate firm order confirmations or rejects followed by provisioning completion notifications. In addition, we need the BOCs to update us on changes to their interfaces so that we can make the necessary adjustments on our end.

If WorldCom is Unable to Access These UNEs, Business Customers Will Not Be Served and Prices for High-Speed Internet Access Will Remain High

Business-Grade Service

38. WorldCom and Covad are the only companies providing business-grade DSL service today on a national basis. As already described above, there are aspects of the BOCs' DSL network architecture and product offerings that make it virtually impossible for an enterprise to receive business-grade DSL. The BOCs are not managing oversubscription and traffic on the network at levels that are suitable for a business-grade product; some are not supporting static IP addressing and routed CPE (which is generally

the easiest and most cost effective way of supporting multiple users over a single DSL line); and most are not offering symmetric bandwidth capabilities for business locations whose usage patterns do not fit those of the typical residential customer. In addition, the BOCs are not offering dry-copper loop service, which constricts a customer's ability to obtain any other type of DSL service other than ADSL. It is my opinion that the BOCs have not developed a business-grade DSL offering because they do not want to diminish the lucrative revenues they receive from selling high-capacity T1 leased lines to businesses (especially when those T1 circuits are really HDSL in disguise).

39. For WorldCom to continue to provide dry copper and line-shared DSL services to businesses and ISPs, we must have cost-effective access to unbundled network elements. In order to drive broader DSL usage across the nation, the overall price of DSL service needs to come down, which in turn requires careful cost management of the underlying network inputs, especially the UNE prices paid to the BOCs. If DLECs lose access to the BOC UNEs or the BOCs are allowed to over-price them, existing DSL providers would be forced to exit the marketplace, which will leave businesses with no other option but to purchase expensive dedicated high-capacity circuits.

Internet Access to ISPs

40. It is critical for WorldCom to continue to have cost-based access to UNEs so that independent ISPs can offer consumers with high-speed access to the Internet at affordable prices. Although WorldCom does not directly compete in the consumer DSL marketplace today, we enable our ISP customers to do so. ISPs are a significant source of innovation in the development of Web content and Internet applications, something

that will in turn drive the demand for consumer broadband Internet access. In addition, competition for consumer-grade DSL service between independent ISPs and the BOCs will result in lower prices and greater choice for consumers.

41. Unlike WorldCom, the BOCs have not developed a cost-effective wholesale ISP product because they would rather steer all DSL customers to the ISP of the BOCs' choosing, which is often times the BOC-affiliated ISP. Where they do offer a wholesale ISP product, it typically is at prices that prohibit small and medium ISPs from competing with the BOC retail services, and is only a viable option to large ISPs if they are willing to make enormous volume commitments that keep the ISPs from buying services from competitive DLECs. Without cost-effective

DSL services provided by WorldCom, most ISPs (especially the small and regional players) cannot compete with the BOC retail offerings and will remain on the sidelines, thereby restricting consumer choice and limiting the opportunity for creative development of broadband applications that will drive consumer adoption.

42. This concludes my Declaration.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 29th, 2002.

/s/ Ian T. Graham
Ian T. Graham

Attachment D

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147

JOINT DECLARATION OF TOM STUMBAUGH AND DAVID REILLY ON BEHALF OF WORLDCOM, INC.

I. INTRODUCTION AND PURPOSE

1. My name is Tom Stumbaugh. I am employed by WorldCom as Senior Manager III - DSL Engineering, WorldCom OnNet DSL. My business address is 9100 East Mineral Circle, Englewood, CO 80112. My principal duties involve leading the engineering team responsible for researching and implementing DSL Access Technology for WorldCom's OnNet DSL Network. I have over nineteen years of engineering design and management experience in wireline telecommunications, chiefly in the data-communications and DSL areas. I began working for WorldCom in December of 2001. My qualifications and prior business experiences include:

- 12/01 to present: Senior Manager III, DSL Engineering, WorldCom OnNet DSL.
- 10/97 - 12/01: Director DSL Access Engineering, Rhythms NetConnections.
- 8/96 - 10/97: Manager Systems Integration Engineering, Applied Innovation.
- 7/82 - 8/96: Senior Network Engineer – CompuServe Incorporated.
- 1983: Bachelor of Science in Computer and Information Science Engineering from the Ohio State University.

2. My name is David Reilly. I am employed by WorldCom as a Network Engineer. My business address is 9100 East Mineral Circle, Englewood, CO 80112. My duties include layer 1 design rules and loop qualification testing used by WorldCom for deploying DSL services in the U.S. I have fifteen years of engineering experience with broadband wireless, wireline, and coaxial communications systems. On December 4, 2001, I began working for WorldCom. My qualifications and prior business experiences include:

- 1999 – 2001: Senior Network Engineer, Rhythms, Inc., Englewood, CO
- 1998: Director of Technology, UltimateCom Wireless ISP, Denver, CO
- 1996 – 1998: Senior System Engineer, Motorola Multimedia Cable Group, Englewood, CO
- 1993 – 1996: Engineering Manager, California Microwave, Bloomingdale, IL
- 1990 – 1993: System Engineer, TeleSciences Transmission Systems, Bloomingdale, IL
- 1988 – 1990: System Engineer, Motorola Inc., Englewood, CO
- 1984 – 1988: Communications Engineer, Western Area Power Administration, Huron, SD
- 1988: BSEE, South Dakota School of Mines & Technology, Rapid City, SD

3. The purpose of this declaration is to explain the continuing need of WorldCom, Inc. ("WorldCom") to obtain UNE loops from incumbent LECs, regardless of whether the loop is composed of all-copper facilities, all-fiber facilities, or a combination of copper and fiber facilities, and regardless of whether the loop is provisioned using Digital Loop Carrier ("DLC") or other pair-gain equipment or carrier systems.

4. This declaration demonstrates that WorldCom will be precluded from providing competitive broadband services based on Digital Subscriber Line ("DSL") and other technologies to a substantial portion of the market if WorldCom is not given UNE access to *all* incumbent LEC legacy and current loop architectures and facilities, together with associated Operations Support Systems ("OSS"). WorldCom needs access to loops provisioned on DLC systems, on "next generation" DLC ("NGDLC") systems, on NGDLC systems equipped with Asynchronous Transfer Mode ("ATM") capabilities, and on broadband passive optical network ("BPON") systems, all of which have been or are being deployed by SBC, Verizon, BellSouth and Qwest ("BOCs").

5. This declaration also serves to supplement a joint declaration we submitted on October 12, 2000, known as the *DLC Declaration*, which has been incorporated into the record of this proceeding.[1] Our previous declaration was

[1] *In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Joint Declaration of Martin Garrity, David Reilly, Tom Stumbaugh and Rob Williams on Behalf of Rhythms NetConnections Inc. and Rhythms Links Inc., CC Docket Nos. 98-147 and 96-98, (dated Oct. 10, 2000)

submitted while we were employed by Rhythms; after WorldCom's acquisition of Rhythms' assets, we now work for WorldCom.

6. This declaration begins with a brief discussion of the history, current status, and future direction of the loop architectures, facilities and equipment commonly deployed by incumbent LECs, particularly the BOCs. This discussion focuses on the role of DLC systems, chiefly NGDLC systems, in the continuing evolution of the loop plant. We then address the ability of NGDLC systems to support loops with higher throughput capacity, focusing on DSL technology as one way to achieve higher capacity loops. Next, we discuss which loop and subloop features and functions WorldCom needs access to as UNEs. Finally, we demonstrate that WorldCom has no practical way to offer competitive DSL-based and other broadband services to end users and ISPs served by fiber-fed NGDLC loop architectures without access to such architecture as UNEs.

II. INCUMBENT LEC LOOP ARCHITECTURE: PAST, PRESENT AND FUTURE

7. The basic purpose of loops and the loop network is the same as it was when they were introduced 100 years ago: to connect end-user premises to a switching and/or routing point with physical facilities that allow end users to send and receive information. For decades, the loop plant consisted of all-copper pairs that ran from the end user premises to the serving central office ("CO") on a one-for-one basis (*i.e.*, one pair serving one end user premises). Generally, analog voice service carried

("DLC Declaration") (attached to comments of Rhythms NetConnections Inc., dated Oct. 12, 2000).

on all-copper loops longer than 18,000 feet suffers from significant signal degradation.[2] Nevertheless, by adding load coils, voice service could be extended to 24,000 feet. Beyond this distance on all-copper loops, however, additional electronics are required for adequate voice service. Resistance increases with circuit length, and in analog loop systems over 24,000 feet, these additional electronics are required to overcome the attenuation in the volume of the voice and terminal signaling in the loop network.

8. Eventually, incumbent LECs began deploying pair gain, or loop carrier, systems in the loop plant. These loop carrier systems "gained" pairs by multiplexing the voice-grade signals from a number of end users, and then carrying the multiplexed signal on fewer feeder pairs. An early example of this architecture upgrade was analog T-carrier systems, which carried 24 voice-grade signals on 2 pairs of copper feeder cables. Carriers have been deploying loop carrier systems since the 1970s.[3]

9. Digital Loop Carrier systems were the next step in the evolution of the loop network architecture and equipment. The DLC loop architecture consists of a Remote Terminal ("RT") in which the DLC equipment is housed, copper twisted pairs that extend from the RT to customer premises (normally routed through a cross-connect field known as a feeder-distribution interface ("FDI"), also known as a

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[2] *See, e.g.*, *Digital Loop Carrier Tutorial*, Telco Systems, available at <http://www.telco.com/products_solutions/WhitePapers/digital/page1.html>.

[3] *See, e.g.*, *Remote Deployed DSL: Advantages, Challenges, and Solutions*, Network Reliability and Interoperability Council Focus Group 3 (NRIC FG3) (Nov. 25, 2001) at 8 (lines 128-129) ("*NRIC FG3 Report*").

serving area interface ("SAI")), multiplexed pair gain copper or fiber facilities between the RT and the CO, and a Central Office Terminal ("COT") to which the copper or fiber feeder facilities from the RT are connected. The copper feeder facilities between the RT and the CO may include repeaters, and can thus travel a greater distance than normal copper twisted pairs before suffering unacceptable degradation.[4] The diagrams below contrast the traditional one-for-one all-copper loop architecture (figure 1) with the DLC architecture (figure 2).

[4] When fiber feeder facilities are used in the DLC loop architecture, the fiber is generally short enough not to require signal regeneration.

Figure 1: Traditional CO Architecture

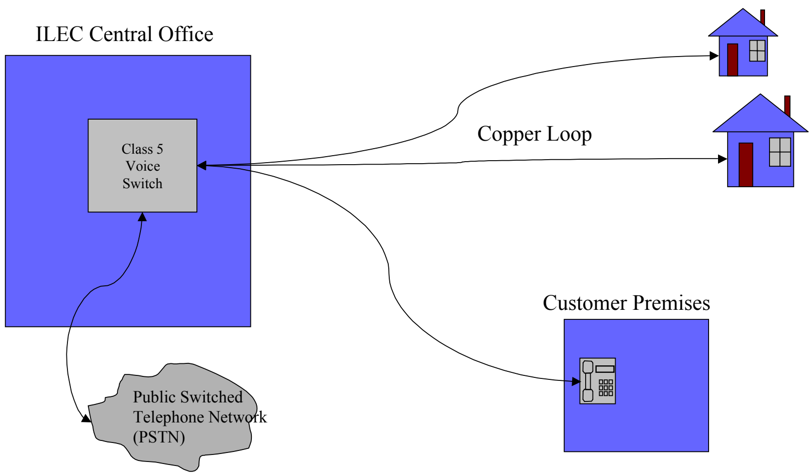
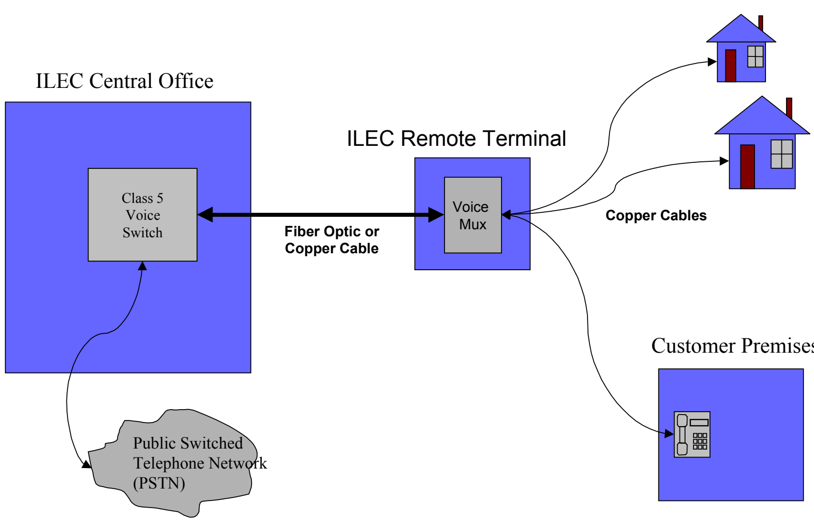


Figure 2: Legacy DLC Architecture



10. DLC was originally used for feeder pair relief in urban areas where increased demand exhausted the installed feeder pairs from the CO. DLC also served to combat service quality degradation associated with extended distances traversed by

all-copper loops. DLC extended the maximum loop serving length by moving the voice frequency interface closer to the customer. In addition, DLC also allowed the transmissions of numerous distant subscribers to be aggregated at the RT and transported back to the CO over relatively few feeder facilities. Moreover, DLCs reduced the amount of copper cable required for a given subscriber base, which helped to get around copper cable supply shortages and route congestion. Thus, DLC systems have made it possible for ILECs to economically serve subscribers that would otherwise be very expensive to serve.

11. Like DLCs, NGDLC systems have been in use by incumbent LECs for some time. As initially deployed in the 1980s, NGDLC systems used the DLC loop architecture discussed above. The original distinguishing characteristic of NGDLC systems was that they employed the GR-303 digital switch interface. GR-303 enhances DLC operations by increasing the number of lines per RT. It also allows for flexible concentration and remote network management, which is accomplished with an Embedded Operations Channel ("EOC").[5] NGDLC systems employ time division multiplexing ("TDM"), allowing many circuit-switched and private line analog and digital services to be carried on a single fiber system. As initially deployed, NGDLC systems included only limited ability to support higher capacity services: T-1 service and ISDN/IDSL were supported, but not other, high-bandwidth DSL types such as ADSL.

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[5] *See, e.g.*, *The Evolution of Digital Loop Carriers*, White Paper, Occam Networks at 4 (May, 2001), available at < http://www.occamnetworks.com/pdf/DLCEvolution3-01.pdf>.

12. More recently, NGDLC systems have been upgraded to support high bandwidth DSL (*e.g.*, ADSL). Adding DSLAM functionality to RT-based NGDLC systems brings the DSL source signal closer to the subscriber, thus improving the quality of service because the length of the copper loop has been shortened.

13. Different vendors are using different approaches to supporting DSL-based traffic over the NGDLC architecture, but Alcatel's system provides a good example for discussion purposes.[6] The Alcatel NGDLC system is known as the Litespan 2000/2012. Until approximately three years ago, the Litespan NGDLC contained only lower bandwidth capabilities, and supported only the traditional circuit-switched services discussed above. Today, the enhanced Litespan platform supports ATM-based traffic, and specifically supports additional types of DSL, including ADSL, HDSL-2, and G.shdsl. These enhancements apply not only to newly deployed Litespan equipment, but also to legacy Litespan 2000 and 2012 NGDLCs already deployed in the field by the RBOCs. The chief difference between "old" and "new" Litespan 2000 and 2012 NGDLC is: 1) a system software upgrade to Release 10.x or above;[7] 2) the replacement of the Litespan Bank Control Units with ATM Bank Control Units ("ABCUs"); and 3) the use of new NGDLC line cards specific to each type of DSL.[8] As configured by at least one BOC – SBC – this DSL-

[6] We note that not all BOC "NGDLC" architectures may be the same. We thus use the term "NGDLC" broadly throughout this declaration to refer to NGDLC and NGDLC-like facilities involving some form of fiber-fed RT deployed to support both voice and data services.

[7] The current software release is Release 11, with Release 12 currently under development.

[8] For example, Alcatel calls its NGDLC line card that supports ADSL an ADLU card.

capable Litespan NGDLC system is configured with a separate fiber feeder system between the RT and the CO to carry ATM-based traffic. This separate fiber system is connected in the central office to an ATM switch.[9] This ATM switch serves as a router, allowing CLECs to obtain their DSL traffic from the overall ATM packet stream. Circuit switched traffic continues to be handled by the TDM side of the Litespan NGDLC system, and is routed to the existing COT.

14. In the DSL-capable NGDLC architecture, the DSLAM functionality is located on the line card in the NGDLC equipment at the RT. The DSLAM function is located in the NGDLC equipment because the DSLAM function must occur at the end of the copper facility, and copper pairs from customer premises terminate at the RT on the line card slots where the ADLU and other types of line cards are inserted. In the diagrams below, conventional CO-based DSL (figure 3) is compared to DSL over a generic NGDLC (figure 4).

[9] SBC and Verizon call this ATM switch an optical concentration device, or "OCD."

Figure 3: CO-Based DSL Architecture

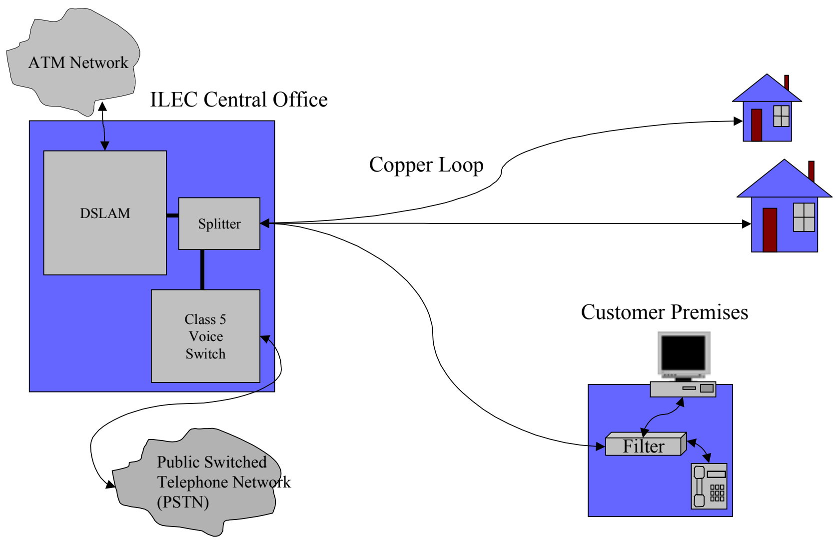
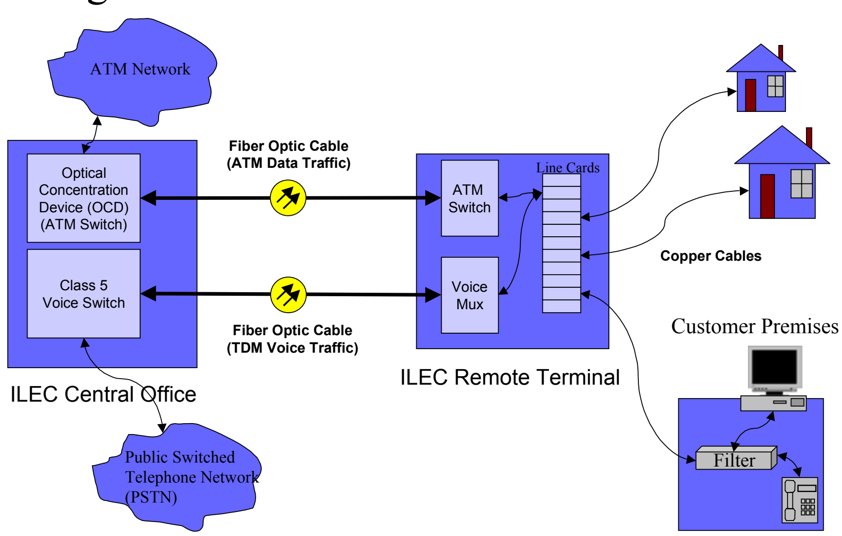


Figure 4: NGDLC DSL Architecture



15. It is also possible to support DSL-based services in an NGDLC architecture using separate DSLAMs located in or next to the RT enclosures that contain DLC and NGDLC equipment. This architecture, of course, would only be used if the NGDLC equipment is not or cannot be made DSL-capable, as discussed above. These separate DSLAMs perform the same function as do central office-based DSLAMs. In such a configuration, the signal from the DSLAM would need to be transported to the CO on incumbent LEC fiber-feeder facilities, via the use of a SONET add-drop multiplexer, and handed off to each carrier at the CO. As we discuss below, however, CLEC installation of separate DSLAMs in or next to RTs is generally not a practical alternative to unbundled NGDLC access because it is prohibitively expensive when compared to the number of potential subscribers that a CLEC could serve from an RT.

16. It is worth noting that, technologically speaking, little has changed in the NGDLC arena since we filed the *DLC Declaration* a year and a half ago. What has changed, however, is the scale and pace at which the BOCs are deploying NGDLC platforms.[10] Indeed, the percentage of local loop subscribers served by DLC and NGDLC systems represents a significant fraction of the local market. Approximately 35% of all fixed access lines in the U.S. are currently served by DLC and NGDLC systems, and this percentage is expected only to increase in the

[10] Unfortunately, notwithstanding the rapid pace of NGDLC deployment by the BOCs, the Commission has yet to expressly rule on how competitors can access DSL-capable loops provisioned on the fiber-fed NGDLC architecture.

future.[11] In Verizon's territory, for example, close to 38% of all access lines are supported through DLCs and, in BellSouth's territory, nearly 44% of the total access lines traverse DLC platforms.[12] The national average is projected to be as high as 50% by 2004.[13] SBC has announced a rapid rollout schedule for its NGDLC platform, "Project Pronto." This $6 billion initiative is expected to "dramatically reduce its network cost structure. Expense and capital savings alone will offset the cost of the entire initiative."[14] For example, in its California territory, SBC plans on replacing current systems with NGDLC systems in approximately 300 of its 750 central offices within three to four years.[15] Thus, within only four years, at least 40% of the central offices in SBC's territory in California will be NGDLC equipped. NGDLC is fast becoming the loop serving technology of choice.

17. Verizon has also indicated that it intends a widespread rollout of DSL capable fiber-fed NGDLC equipment in an architecture essentially identical to that

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[11] *See DSL Anywhere*, DSL Forum ("a consortium of more than 330 leading industry telecommunications, equipment, computing, networking and service provider companies, including incumbent and competitive carriers"), at 7 (December 12, 2001) (citing RHK 2000 Access Network System Market Forecast, February 29, 2000). Report available at <http://www.ntia.doc.gov/ntiahome/broadband/comments/dslf/dsl_anywhere.pdf> ("*DSL Anywhere*").

[12] *See Optical Access: North America, Service Provider Analysis: BellSouth, Qwest, SBC, and Verizon – Deployment and Trends for DLC and PON*, RHK Telecommunications Industry Analysis (Dec. 2001) at 5, 20 ("*Deployment and Trends for DLC and PON").*

[13] *See DSL Anywhere* at 7.

[14] *See SBC Launches $6 Billion Initiative To Transform It Into America's Largest Single Broadband Provider*, News Release, SBC Communications, Inc. at 1 (Oct. 18, 1999), available at < http://webcast.sbc.com/media/news/release.doc>.

[15] *See Evidentiary Hearing in the Permanent Line-Sharing Phase of OANAD*, California Public Utilities Commission (July 30, 2001), Tr. at 12854.

of SBC's Project Pronto.[16] Verizon has also indicated its intention to offer CLECs a wholesale service Verizon calls "PARTS" (for "Packet At the Remote Terminal Service"). In a February 2001 presentation located on Verizon's Website, Verizon "estimates approximately 1,500 PARTS eligible RTs may be deployed throughout VZ over the next two years."[17]

18. In sum, DSL-capable NGDLC systems offer two significant advantages for DSL service providers: 1) As described above, they allow an increased number of subscribers to receive DSL service (by extending the distance a subscriber can be located from the CO, thus affording even distant subscribers DSL access); and 2) they allow for improved service, in the form of higher data rates (by moving the DSLAM closer to the subscriber). These are the key motivators for the BOCs' mass deployment of DSL-capable NGDLC systems. Indeed, as the Public Service Commission of Wisconsin recently recognized:

> Ameritech initiated its Project Pronto network initiative specifically to overcome limitations inherent in the ability of copper loops to support advanced services to the majority of its customer base…. Project Pronto will extend the market reach of DSL. Ameritech will be able to provide DSL service to an additional 20 million customers

[16] *See Planned Verizon Next Generation Digital Loop Carrier (NGDLC) Remote Terminals (RT)*, Verizon Communications, Inc., available at <http://128.11.40.241/east/wholesale/resources/planned_next_gen_dig_loop_carrier.htm.

[17] *See Verizon PARTS Workshop, Packet at Remote Terminal Service*, Verizon Communications, Inc. (Feb. 6, 2001), available at <http://128.11.40.241/east/wholesale/resources/ppt/0206workshop.ppt>. We note that Verizon recently announced a more limited roll out during 2002 of its DSL-capable fiber-fed NGDLC platform. However, Verizon has not withdrawn its announced plans to deploy its DSL-capable NGDLC platform on a broad basis.

> throughout the 13-state SBC territory that it cannot serve without Project Pronto.[18]

III. WORLDCOM NEEDS ACCESS TO THE NGDLC LOOP, AND SUBLOOP AND PACKET TRANSPORT

19. As we explained in the *DLC Declaration*, in order to serve customers whose loop has been migrated to fiber, WorldCom needs access to the end-to-end loop and associated electronics.[19] Specifically, WorldCom cannot provide DSL–based services to any end user served with a fiber-fed NGDLC loop without access to the end-to-end NGDLC loop and the copper cable subloop that travels from the customer's premises to the RT.[20]

20. As NGDLC platforms become increasingly prevalent in the incumbent LECs' networks, CLECs' CO-based infrastructure, deployed in the past 3 – 4 years, will become less and less useful. As discussed above, CO-based DSLAMs cannot be utilized over fiber-fed loops. As a result, if an incumbent LEC elects to install an NGDLC system and removes existing copper from the CO, the CLEC's CO-based DSLAM will be of no use.

21. Even if the incumbent LEC leaves some of the existing copper loops in place, CLECs will be unable to compete effectively. First, the incumbent LECs will be able to serve more customers than CLECs because they will have access to both the fiber-fed and copper loops, while CLECs will be left to serve only those

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[18] *Investigation Into Ameritech Wisconsin's Unbundled Network Elements*, Public Service Commission of Wisconsin, Docket 6720-TI-161, Final Decision at 10 (March 22, 2002) ("*Wisconsin Decision*").

[19] *DLC Declaration*, para. 81.

[20] *Id*., paras. 90-92.

customers they can reach using copper loops from the CO. Second, because the RT-based DSLAMs are closer to the customer, the incumbent LECs will be able to offer more attractive service offerings with higher data rates.

22. Third, even if the existing copper is maintained, CLECs may not be able to use it because of interference issues. The incumbent LECs' DSL service may interfere with CLEC DSL service provided on all-copper loops, because RT-based ADSL services overpower the weaker home run copper ADSL loops that share the same distribution facilities. For example, if WorldCom is providing ADSL to an end user that is 15 kilofeet away, and the incumbent LEC is providing RT-based ADSL to an end user that is only 12 kilofeet away, the potential for harmful interference is significant. The incumbent LEC signal is much stronger and will overpower the CLEC's weaker signal. If a CLEC is forced to provide service solely over home run copper, and an incumbent LEC places DSLAM functionality in the same RT that serves the CLEC's end user, the transmission of the incumbent LEC's RT-based ADSL signals will effectively prevent the CLEC's signal from being usable at its destination.[21] The interference between RT-based ADSL transceivers and home run ADSL loops was the subject of a white paper that WorldCom and others submitted to the FCC's Network Reliability and Interoperability Council (NRIC V).[22] In the white paper, WorldCom and others outlined this issue and urged the Commission to take action to adopt rules that would mitigate this problem.

[21] *See DLC Declaration*, paras. 120-127.

[22] *See NRIC FG3 Report.*

IV. CLECS NEED UNE ACCESS SO THAT THEY CAN DIFFERENTIATE THEIR SERVICE OFFERINGS

23. CLECs need UNE access to the NGDLC platform so that they can: 1) provide service to customers served by fiber-fed loops; and 2) offer different varieties of xDSL service and different service levels. Like CO-based DSL service, UNE access to NGDLC loops will allow for diverse CLEC service offerings. If WorldCom is denied UNE access and is permitted only to purchase ILEC-provided services, we will be unable to offer the types of products we currently sell to businesses and ISPs.

24. Mover, with different, industry-standard Quality of Service ("QoS") classes, CLECs could provide consumers with throughput-sensitive applications like video and voice over DSL or IP. When the incumbent LEC sells a DSL service to residential areas from their DLC based DSLAM, they use an Unspecified Bit Rate ("UBR") QoS class and every customer gets the same level of service. A CLEC like WorldCom may decide to sell a variety of DSL-based services to the same set of customers. Examples include small office or home office broadband services, where the customer gets better service level agreements and more guarantees on data throughput rates; voice over DSL, where the voice encapsulated data gets prioritized over lower priority data traffic; or premium Internet service for server-based home businesses (*e.g.*, Mary Kay). In these cases, the CLEC must have access to different ATM QoS classes in order to support different types of services. ATM technology, used in the data segment of the NGDLC platform, carries traffic on virtual transmission paths, known as Virtual Circuits ("VCs"), Permanent Virtual Circuits ("PVCs"), Permanent Virtual Paths ("PVPs"), and Switched Virtual Circuits

("SVCs"). There are industry-standard ATM QoS classes applicable to PVCs and PVPs, which support different services with different latency (delay) requirements. If the incumbent LEC only allows the UBR QoS class, whether as a service or as a UNE, the CLEC's ability to sell differentiated products will be severely constrained. The incumbent LECs must allow CLECs access to all of the QoS classes that are technically feasible with NGDLC platforms. As we discussed in the *DLC Declaration*,[23] CLECs must have the option of guaranteed bit-rates on the DSL-capable NGDLC platform. This capability will protect DSL customers against incumbent LECs oversubscribing the fiber and will also allow for bit-rate sensitive applications like video.

25. If a QoS class requires additional bandwidth, that can be factored into the pricing of the loop with that QoS class feature. BOCs want to limit QoS to UBR service or, at best, constant bit rate ("CBR") service at a maximum of 96 kilobytes per second per PVC. This will significantly limit CLEC service offerings. UBR service is a "best efforts" class of service, with no guarantee of quality (*i.e.*, speed or throughput). Industry-wide forums have defined additional QoS classes, including higher bandwidth CBR, Available Bit Rate ("ABR"), and Variable Bit Rate ("VBR"). NGDLC vendors are working to add these additional ATM QoS classes to their platforms. These industry-standard QoS classes will allow CLECs to offer more diverse offerings, such as bit-rate sensitive applications like video and voice over IP.

[23] *DLC Declaration*, paras. 94-95.

V. NO ALTERNATIVES EXIST FOR CLECS TO ACCESS FIBER-FED LOOPS AND SERVE END-USERS WITH DSL

Collocation at the RT is No Alternative to Unbundled Access

26. As we explained in the *DLC Declaration*, unlike Central Offices, Remote Terminals usually lack adequate space to allow for collocation of traditional DSLAMs.[24] While WorldCom wants to maintain the option to collocate traditional DSLAMs at the RT, this option will not likely be the most efficient or the most effective way to provision DSL over fiber-fed loops, and may not even be routinely available. Additionally, because RTs serve far fewer subscribers than COs, the cost of the DSLAM per subscriber is considerably higher than the case where the DSLAM is located in the CO. This fact alone renders remote collocation uneconomical.

27. The incumbent LEC answer to the RT space problem -- that CLECs install DSLAMs in their own adjacent RTs -- is economically unfeasible and, under this configuration, the means to connect the DSLAM to the unbundled fiber feeder network element may not be technically feasible, let alone commercially viable. As we discussed in the *DLC Declaration*,[25] rights-of-way issues and land-use restrictions also pose substantial obstacles to adjacent collocation. Incumbent LECs often install remote terminal equipment on privately owned premises where land-use restrictions arise from rights-of-way, easement and zoning requirements. Before a CLEC can place equipment in an adjacent collocation arrangement, agreements must be secured with the land owner and permits must be obtained from local municipalities. Unlike

[24] *Id.*, paras 64-66.
[25] *Id.*, paras. 68-69.

incumbent LECs, which have historical ease of access based on their monopoly status, CLECs may not be able to gain authorization and permits from local municipalities and private landowners to build adjacent RTs. Imposing these requirements on CLECs will place an unacceptable burden on competition.[26]

28. Exacerbating the RT collocation problem is the fact that the BOCs are designing and deploying NGDLC RTs to fit only their own equipment, purposely overlooking CLEC collocation needs. For example, in the design of its Project Pronto, SBC unnecessarily elected to: 1) hard wire the copper feeder pairs to its NGDLC equipment; and 2) deploy RT cabinet enclosures sized to fit only the NGDLC equipment, with no spare space for other equipment, thereby precluding collocation at the RTs. This reflects either poor engineering judgment or another attempt at suppressing competition. In any event, largely because of BOC design, the cost for CLECs to collocate conventional DSLAMs at RTs has been found to be between $15,000 and $30,000, or even higher, as discussed below. CLECs simply cannot compete on a large-scale basis if they have to incur costs of this magnitude.

29. Arbitrators in the Texas Project Pronto Line Sharing Proceeding recently awarded CLEC access to the loop as an end-to-end UNE in the NGDLC platform. In their decision, the arbitrators provided an informative discussion regarding SBC/SWBT's design of the RT and the problems associated with DSLAM collocation:

> [B]ecause of the way SWBT has designed Project Pronto, CLECs are in essence denied the ability to collocate DSLAMs at SWBT remote terminal (RT) sites. SWBT

[26] *Id*.

> indicated that it has made voluntary commitments as a solution to this problem by increasing the size of RTs and providing adjacent cabinet structures. However, because SWBT chose to hard wire the RT, a CLEC may have to pay between $15,000 and $30,000 per remote terminal for access to the subloop. Uncontroverted evidence in this record indicates that SWBT designed the RTs in such a manner as to preclude any reasonable CLEC access to sub-loops at the RT even though vendors manufacture RTs with cross-connect functions that allow access to subloops. The simple fact that SWBT has hardwired its equipment at the RT and CLECs will be forced to pay for a work-around or to build adjacent collocation space supports a finding that SWBT cannot meet its burden to be relieved of its unbundling obligation. In sum, the evidence presented to the Arbitrators indicates that collocating a DSLAM at the remote terminal will in most cases not only prove to be uneconomical, but also technically problematic."[27]

30. SBC's unilateral decision to hard wire the remote terminals dramatically skewed the playing field, causing a substantial lack of parity between SBC's data affiliate ("ASI") and CLECs that wished to collocate at remote terminals. As the Texas Arbitration Award recognized, collocating CLECs would have to pay between $15,000 and $30,000 per remote terminal for access to the subloops (setting aside other collocation costs). For example, if one assumes that a CLEC must collocate in 20 RTs for a particular CO, and you assume an average cost of $22,500 for RT collocation (the average of $15,000 and $30,000), WorldCom would need to spend an additional $450,000 in unnecessary collocation costs *for this one CO*. ASI,

[27] *Petition of Rhythms Links, Inc. against Southwestern Bell Telephone Company for post-interconnection dispute resolution and arbitration under the telecommunications act of 1996 regarding rates, terms, conditions and related arrangements for line sharing*, Public Utility Commission of Texas, Docket No. 22469, Revised Arbitration Award at 66 (citations omitted) ("*Texas Arbitration Award*").

on the other hand, can access DSL-capable loops through Project Pronto at zero incremental cost.

31. Moreover, in the Illinois Project Pronto line sharing proceeding, Sprint indicated that the cost of collocating DSLAMs at the remote terminals was dramatically more expensive.[28] For example, Sprint presented evidence that it spent at least $130,000 and several months attempting to collocate just one DSLAM at a remote terminal in Kansas.[29] As the Illinois Commission recognized: "[u]sing the number of RTs in Illinois, Sprint alone would have to spend an estimated $260 million to obtain access to the same loop architecture which SBC/Ameritech can access."[30] CLEC collocation of DSLAMs at the RT is clearly no solution.

32. As discussed above, Verizon's NGDLC platform is expected to look much like SBC's Project Pronto. Consequently, WorldCom anticipates many of the same obstacles presented by remote terminal collocation with SBC. Indeed, the New York Public Service Commission has ruled on the issue of collocation at Verizon's RTs, and also found that it is uneconomical for CLECs to do so: "[the record] shows that collocation by competitors on the terms offered by Verizon's tariff at these remote terminals is under many circumstances prohibitively costly and slow, and unlikely to be commercially viable."[31]

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[28] *See Illinois Bell Telephone Company Proposed implementation of High Frequency Portion of Loop (HFPL)/Line Sharing Service*, 00-0393, Illinois Commerce Commission, Order On Rehearing at 24 (Sept. 26, 2001) ("*Illinois Order on Rehearing*").

[29] *Id.*

[30] *Id*.

[31] *Proceeding on Motion of the Commission to Examine Issues Concerning the Provision of Digital Subscriber Line Services*, State of New York Public Service Commission,

Use of Existing Copper Loops is No Alternative to Unbundled Access

33. Incumbent LECs suggest that, as an alternative to unbundled access, CLECs simply use existing all-copper loops that run parallel to fiber-feeder NGDLC loops to the customer's premises. This suggestion is based on the fact that, when an incumbent LEC installs a DLC system, in addition to installing fiber from the CO to the RT, it leaves some of the old copper loops in the ground and runs them through the RT to the original customer. As we discussed in the *DLC Declaration*,[32] and Section III above, this "solution" is unworkable for two reasons. First, as discussed above, the potential for interference from the incumbent LEC's RT-based service is far too great. The CLEC-transmitted copper cable signal would be significantly attenuated by the time it reached the distribution cable, where it would be joined by a very strong signal generated by the incumbent LEC's RT-based service. Because of the difference in magnitude, the incumbent LEC signal would drown-out the CLEC signal.[33]

34. Second, as a practical matter, the "existing copper loop" may no longer exist (or, at a minimum, will no longer be in one piece). Once fiber is installed, the typical incumbent LEC practice is to re-use the existing copper in the feeder side of the RT to serve customers between the CO and the RT. As a result, the "old" copper loop will no longer exist in most cases. The distribution portion (1/2 of

Opinion No. 00-12, Case 00-C-0127, Opinion and Order Concerning Verizon's Wholesale Provision of DSL capabilities at 25 (issued Oct. 31, 2000) ("*New York Order*").

[32] *DLC Declaration*, paras. 120-127.

[33] *DLC Declaration*, paras. 120-127.

the copper loop) of the loop now connects the RT to the customer. The RT is, in turn, connected to the CO by fiber. The copper feeder portion of the loop is recycled to another customer closer to the CO. Thus, the copper loop no longer exists but the copper is still in the ground. Because of this reality, BOCs can commit to leaving copper in the ground, while simultaneously refusing to provide CLECs with a copper loop.[34] As the Public Service Commission of Wisconsin recognized in awarding unbundled access to SBC's Project Pronto, "Ameritech will have an incentive to retire or simply not maintain the copper plant because it is inefficient to maintain two loop networks simultaneously."[35]

VI. INCUMBENT LECS SHOULD BE REQUIRED TO PROVIDE CLECS WITH UNE ACCESS TO THE NGDLC LOOP PLATFORM

35. In sum, it is technically feasible to unbundle NGDLC platforms such as Project Pronto and Verizon's NGDLC system. As was the case in the *Line Sharing Proceeding*, the Commission should require incumbent LECs to do so immediately, and to make any required OSS modifications to support such unbundling within six months.

[34] *DLC Declaration*, para. 127.

[35] *Wisconsin Decision* at 10.

Declaration

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April __2____, 2002.

______/s/ Tom Stumbaugh________
Tom Stumbaugh

Declaration

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April __2___, 2002.

/s/ David Reilly
David Reilly

Attachment E

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147

DECLARATION OF BERNARD KU
ON BEHALF OF WORLDCOM, INC.

Based on my personal knowledge and on information learned in the course of my duties, I, Bernard Ku, declare as follows:

1. My name is Bernard Ku. In my current position as a Senior Manager of WorldCom, Inc. (WorldCom), I have responsibility over the Intelligent Network, Signaling, Switching Standards and Patent Engineering Group. I also serve as a delegate to the ITU-T Study Group 11 (IN/IP requirements), Study Group 16 (Multimedia Systems, Services and Terminals), Study Group 13 (IP based Networks and Interworking), and also the U.S. Standards Committee T1S1. I received a Bachelor of Science degree from the University of Hong Kong, a Masters in Business Administration from the University of Texas, a Masters degree in Computer Science from the University of North Texas, and a Ph.D. from Southern Methodist University (SMU). Since 1994, I

have served as an Adjunct Professor in the Electrical Engineering and Telecommunications Systems Department at SMU.

2. In WorldCom's pleadings in the *UNE Remand* proceeding, I attested in a declaration and reply declaration that CLECs must have access to call-related databases and signaling networks provided by ILECs. The purpose of this declaration is to explain that market or other conditions have not changed in a way that would warrant any modification to my conclusions in my earlier *UNE Remand* declarations.

3. As I explained in my earlier declarations, signaling networks are essential. Signaling networks transmit routing messages between switches and between switches and call-related databases. These databases include, for example, the LIDB database, the LNP database, the 800 database, the 911 database, the CNAM database, and AIN databases.

4. CLECs using an ILEC's switch to provide service have no option but to obtain signaling from the ILEC. When a CLEC purchases ILEC switching, a CLEC's need for ILEC signaling is absolute. This is because an ILEC's switch cannot transmit signals on calls from ILEC customers through the ILEC's signaling network and calls from CLEC customers through the CLEC's signaling network. The existing SS7 protocol does not allow the database to which a query is sent to vary depending upon who originated the call. Moreover, the ILEC's switch is only connected to its own signal transfer point (STP).

5. Where CLECs use their own switches, it also continues to be imperative that CLECs be able to obtain access to an ILEC's signaling networks, as I explained in my previous declarations. This is particularly so for smaller CLECs. As the Commission

found in the *UNE Remand Order*, signaling networks provided by third-party providers are not as ubiquitous as those of the ILECs, forcing CLECs using such networks to route signals to distant STPs. This is because no third-party vendor owns a signaling network in every LATA or provides direct connectivity with the ILECs' switches. Moreover, third-party signaling networks lack the redundancy that protects against outages.

6. In contrast to most CLECs, WorldCom has its own signaling network that it uses as an interexchange carrier. It can utilize this network for local service when it is providing service using its own switches. But even when a CLEC is using its own signaling network, the CLEC must still be able to access the ILEC's signaling network. Only by transmitting signals through the ILEC's signaling network can the CLEC obtain information needed to route calls – such as whether a particular ILEC switch is congested and should be avoided. In addition, only by transmitting signals through the ILEC's signaling network can the CLEC access information in the ILEC's call-related databases, since these databases are connected only to the ILEC's STPs.

7. With respect to call-related databases themselves, it continues to be competitively necessary for CLECs to use the ILEC's call-related databases. When CLECs are using unbundled switching, there is no way for them to connect to their own databases. As noted above, the ILEC switch cannot direct signals to the CLECs' databases for CLEC customers and to the ILEC's databases for other customers.

8. Moreover, even when CLECs are using their own switches, CLECs often cannot create call-related databases of comparable quality to those of the ILECs, and thus need access to ILEC databases. Much of the information contained in ILEC databases is not independently replicable by a CLEC or third-party vendor. LIDB contains line and

billing information for all lines of ILEC customers, for example, as well as information on all CLEC UNE-P or resale customers. This information is updated constantly. Thus, when CLEC customers attempt to call ILEC customers, who still constitute the vast majority of customers, a CLEC has no way of determining whether the ILEC customer will accept collect calls, for example, without access to the ILEC's LIDB information. A CLEC or third-party vendor cannot develop its own LIDB without access to the ILEC's LIDB – and even then would need the information from the ILEC to be updated many times each day.

9. Additionally, it would require a significant investment for a CLEC to deploy a redundant network architecture, and new entrants generally lack economies of scale sufficient to justify such an investment. As a result, most have not made such an investment. Some larger CLECs have created their own call-related databases for particular functions – where they have access the information needed to populate their own databases and they have sufficient economies of scale to justify the investment. WorldCom has, for example, developed its own LNP database. WorldCom has access to all of the ILEC LNP information through third party administrators of LNP data. WorldCom also has substantial economies of scale with respect to LNP since WorldCom needs the LNP information as an IXC, as well as a CLEC. But this is a rare combination of circumstances even for a large CLEC such as WorldCom. Requiring CLECs to develop call-related databases would constitute a significant barrier to entry.

10. In any event, even if it made economic sense for some CLECs to deploy additional databases and they had the information to do so, it would still take time to deploy such databases. They would need per-query access to ILEC databases in the

interim or they would be unable to offer the important services that rely on such databases. For databases such as LIDB, such issues are hypothetical as no ILEC has made available the batch downloads of database information a CLEC would need to create its own databases.

11. This concludes my declaration on behalf of WorldCom.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 2nd 2002.

/s/ Bernard Ku
Bernard Ku

Attachment F

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147

JOINT DECLARATION OF JOHN GALLANT AND MICHAEL J. LEHMKUHL ON BEHALF OF WORLDCOM, INC.

Based on our personal knowledge and on information learned in the course of our duties, we, declare as follows:

1. My name is John Gallant. I am employed by WorldCom, Inc. as a Distinguished Technical Member. My current business address is 901 International Parkway, Richardson, TX 75081. I have approximately twenty years of technical experience in Intelligent Network systems in telecommunications networks as an architect and software development manager, and have served as a technical architect for CNAM applications for MCI WorldCom. I graduated from Princeton University in 1982 earning a Ph.D. degree in Computer Science. I earned a Bachelor's degree in Biochemistry from Northwestern University in 1976.

2. My name is Michael J. Lehmkuhl. I am employed by MCI Worldcom, Inc. as a Senior Regulatory Specialist for Operator Services and Directory Assistance. My current business address is 601 South 12th Street, Arlington, Virginia, 22202.

3. The purpose of our testimony is to explain the use of the Calling Name (CNAM) database to explain why switch-based CLECs need access to CNAM information through a batch download. CNAM is a call-related database currently used by exchange carriers to offer Caller ID services. The database contains the name and number of the calling party. As an incoming call is routed and terminates at a customer's phone, a query is sent from the terminating switch via the signaling network to the CNAM database to retrieve the information. The information is then displayed on the subscriber's terminating equipment (*e.g.*, a "Caller ID box") to identify the caller. The industry standard requires that the information be provided to the subscriber before the second ring cycle.

4. As Dr. Ku explains in a separate declaration, CLECs leasing switching from the ILEC must have access to the ILEC's databases, including CNAM, because the ILEC's switch cannot direct queries to the CLECs' databases.

5. CLECs using their own switches must also have access to the ILECs' CNAM information. ILECs maintain the vast majority of CNAM information as a result of their dominance in the local market. Because they have well over 90% of the local market, they maintain over 90% of the CNAM information and the vast majority of calls originate from their customers.[36] Consequently, when a call terminates on a CLEC's

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[36] *See, Local Telephone Competition: Status as of June 30, 2001*, Industry Analysis Division, Common Carrier Bureau, Table 1 (Feb. 2002).

switch, the CLEC must have access to the information in the ILEC's CNAM database in order to offer a competitive Caller Id product to its customers.

6. ILECs should be required to provide this information via batch download. At present, most ILECs only provide access to CNAM information on a per-query basis. CLECs must query the ILECs' databases each time they want CNAM information and are charged for each query. The ILECs have refused to provide batch downloads of CNAM information except in the states that have required it.

7. Downloads would provide access to the CNAM information in a consolidated form, allowing the CLECs to maintain their own databases. WorldCom has determined that unlike for some other databases, it makes economic sense for it to maintain its own CNAM database. Maintenance of such a database would allow it to offer innovative services.

8. It is technically feasible for an ILEC to provide downloads of the CNAM database. A copy of that database can be made and extracted using common computer programming. This is the same type of procedure currently used to extract Directory Assistance Listing ("DAL") information from an ILEC's DAL database.

9. Although information updates are frequently made to the ILEC's CNAM database when a customer changes his or her phone number or name, a slight delay in providing such updates to the CLECs would not have significant negative consequences. In contrast, for example, batch downloads from LIDB would be more difficult, as carriers need access to extremely up-to-date information to prevent calling card fraud. Updates to CNAM information could be made available on a daily basis, as is currently done with the DAL database.

10. Receiving download access to the CNAM database is important to WorldCom so that it may have the same control over the database that is already enjoyed by the ILECs and can develop that database as it chooses. Per-query access to CNAM information does not allow WorldCom to self-provision Caller ID and other services but restricts WorldCom to providing Caller ID in the manner prescribed by the ILECs.

11. WorldCom is aware that Ameritech is starting to migrate its CNAM services to an Advanced Intelligent Network ("AIN") platform. While such a move to AIN is possible for Ameritech, WorldCom is precluded from implementing similar technology since it is limited to dip-only or per-query access to the vast majority of Caller-ID requests it handles.

12. Per-query access to the ILEC's CNAM database also restricts MCIm's ability to offer other innovative service offerings or to offer service more efficiently, quickly, and cheaply. For example, WorldCom could offer CNAM over a TCP/IP system which would be less costly to maintain, rather than on the SS7 network. The provisioning of CNAM through TCP/IP might also facilitate the development of new services and the integration of this service with emerging voice over Internet applications. WorldCom would also be free to develop other features such as a distinctive ring function that could help subscribers recognize certain incoming calls. These types of new features and services cannot be offered if WorldCom relies on per-query access to the ILEC's CNAM database.

13. Per-query access also has additional costs. WorldCom has determined that it is more efficient to maintain its own CNAM database (a relatively simple database) then to access the ILECs' databases on a per-query basis. Accessing the ILECs'

databases requires some development costs to properly configure the network. More important, WorldCom would have to pay for each and every query.

14. Because of the advantages of maintaining its own CNAM database, WorldCom has decided to do so even without downloads of CNAM information from the ILECs. There are offsetting disadvantages, however. WorldCom's CNAM database only contains information on WorldCom customers – a very small percentage of all local customers. When WorldCom performs a CNAM lookup in its own database,[37] the information is often not found in the database. WorldCom then performs an NPA lookup, so that at least the state can be displayed along with the line number of the calling party. Consequently, when offering local service via its own switch, WorldCom's Caller ID service is unable to offer the name for most callers. Thus, without batch downloads of the ILEC's CNAM information, WorldCom's Caller ID service is significantly inferior to the ILECs' service.

15. WorldCom could attempt to remedy this particular defect by looking first in its own database and then, if the calling customer's name was not there, querying the ILEC's database. This process would have its own disadvantages, however. The services WorldCom could offer would still be controlled by the ILEC for most customers. WorldCom would still incur per-query charges – in addition to the cost of maintaining its own database. In addition, the multiple database dips that would be necessary could result in dialing delay.

16. As the call reached the terminating switch and a Caller ID request is made, WorldCom would have to first check its own database for the information. If the

[37] WorldCom uses a third party, Illuminet, to store its CNAM information.

information was not found, WorldCom would have to determine which LEC owns the number, then route the call out to that LEC and back to make the dip. If the LEC did not have the name, then exception handling procedures would have to be used to find the name. In some cases, this process would not be completed in time to display the information to the customer within the short ring cycle required.

17. Only through batch downloads can WorldCom and other CLECs maintain CNAM databases that enable them to offer Caller ID services that are equivalent to those of the ILECs. These downloads would also provide CLECs control over the databases that is equivalent to that of the ILEC and allow them to offer new and innovative services.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April __2nd__, 2002.

/s/ Michael Lehmkuhl
Michael Lehmkuhl

Declaration

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 3, 2002.

/s/ John Gallant
John Gallant

Attachment G

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147

**DECLARATION OF MICHAEL J. LEHMKUHL
ON BEHALF OF MCI WORLDCOM, INC.**

Based on my personal knowledge and on information learned in the course of my duties, I, Michael J. Lehmukuhl, declare as follows:

1. I am employed by MCI Worldcom, Inc. as a Senior Regulatory Specialist for Operator Services and Directory Assistance. My current business address is 601 South 12th Street, Arlington, Virginia, 22202. Currently, I support the business and regulatory efforts of WorldCom for directory assistance and operator services through its ISN Services & Solutions Group.

2. Previously, I practiced as an attorney representing various companies in the telecommunications industry before the FCC and other federal agencies for approximately 8 years. I graduated Drake University Law School in 1990, earning both a Juris Doctorate in Law and a Master of Arts in Mass Communication.

3. A CLEC that has deployed its own switch also can deploy its own DA platform to provide directory assistance to its customers served by that switch. WorldCom provides its own facilities-based DA local service wherever WorldCom has installed a switch. But WorldCom and other CLECs can provide the complete and accurate directory assistance customers demand *only if* they have access to the ILECs' DA databases. It is critical to WorldCom's plans to have access to these databases.

4. By virtue of their continued dominant share of the market for local telephone service, ILECs control nearly all customer directory listing data comprising DAL information. Independent DA data from third-party, non-ILEC sources is not as accurate as ILEC DAL data. WorldCom has found that the independent DAL data often has missing information about existing residential or business customers. WorldCom has also found that independent DAL data contains listings of many subscribers who have terminated service at one location and who have not been removed from the independent provider's DAL data. A DAL product based on these erroneous listings is inferior to the ILECs' product. Use of these listings is also directly harmful to consumers who, are given erroneous information, and, as a result of the error, make a telephone call to a wrong number for which they may be charged.

5. As discussed in the *UNE Remand* proceeding, MCI WorldCom commissioned its own studies for marketing and business planning purposes that show that data from non-ILEC sources tend to have twice as many inaccuracies as data from ILEC sources, and tend to be far less complete. As recently as last year, WorldCom commissioned a further study that showed similar results. Based on wide sampling, these studies showed that there were significantly greater error rates in listings derived from

independent DA data providers than from data obtained directly from ILECs. These error rate differences held true for both business and residential listings. In fact one of these studies found, for example, that in cases where businesses had terminated their service, listings provided by independent DA data for that business were erroneous (*i.e.,* they showed the telephone number still in service) more than two out of three times.

6. Because of their exclusive control of nearly all of the customer listing data information, with no reliable alternative source for competitors, ILECs (unless prevented by state commissions) charge exorbitant rates for these listings. For example, in Missouri where the state commission allowed SBC to charge whatever it wished, SBC charges $0.0585 per listing and update, while the Texas PUC determined the cost-based rate to be $0.0011 per listing and $0.0014 per update.[38] That is approximately a 500% difference. In fact, in most states where SBC and WorldCom have recently or are currently arbitrating interconnection agreements, SBC has advocated for rates of $0.04 per listing and $0.06 for each listing update – an even bigger difference from the Missouri rate.

7. In sum, because ILECs control nearly all customer listing data comprising DAL information, and there is no reliable alternative source of the information, CLECs need access to the ILEC DAL information (in bulk form, with daily updates) as a UNE.

[38] *See* Arbitration Award, *Petition of MCI Telecommunications Corporation for Arbitration of Directory Assistance Listings Issue under Federal Telecommunications Act of 1996*, Texas Public Utility Commission, Docket No. 19075, pp. 12-4 (Feb. 13, 1998); Arbitration Order, *In the Matter of the Petition of MCImetro Access Transmission Services, LLC et. al. for Arbitration of an Interconnection Agreement with Southwestern Bell Telephone Company Under the Telecommunications Act of 1996*, Before the Public Service Commission of the State of Missouri, Case No. TO-2002-222. p. 37 (Feb. 28, 2002).

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April ___2___, 2002.

/s/ Michael Lehmkuhl
Michael Lehmkuhl

Attachment H

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338
	)	
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147

DECLARATION OF SHERRY LICHTENBERG
ON BEHALF OF WORLDCOM, INC.

1. My name is Sherry Lichtenberg. I have twenty years of experience in the telecommunications market. Prior to joining WorldCom, Inc., I was Pricing and Proposals Director for AT&T Government Markets, Executive Assistant to the President, and Staff Director for AT&T Government Markets. I also held a number of positions in Product and Project Management. I have been with WorldCom, Inc. for five years. I am currently employed by WorldCom, Inc. as a Senior Manager in the Mass Markets local services team. I will refer to the division of WorldCom, Inc. that offers local residential service as “MCI.” My duties include designing, managing, and implementing MCI’s local telecommunications services to residential customers on a mass market basis nationwide, including Operations Support Systems (“OSS”) testing. I have been involved in OSS proceedings throughout the country.

2. The purpose of my declaration is to describe the continuing need for access to the ILEC’s OSS for local market entry. There have been no market or technological changes since

the Commission's *UNE Remand Order* — OSS remains critical to the ability of new entrants to compete in the local market.

3. Operations Support Systems are all of the systems, databases, business processes, and personnel needed to ensure that a local exchange carrier can satisfy the needs and expectations of its customers, including the information necessary to understand the customer's current configuration and the ability to receive electronic wholesale bills from the ILEC and to bill end user customers. The fundamental importance to a CLEC of having nondiscriminatory access to the ILEC's OSS is well established. Effective access to OSS has been a critical factor in the determination of which states MCI has entered the local market. MCI has spent over $100 million and significant time and resources in the past two years on software development to build the necessary OSS interfaces. When the interfaces do not work or work only intermittently, MCI's sales and installations are imperiled. Working OSS has made it possible for MCI to enter 11 states and to provide local service to more than one million local customers.

4. Competitors need access to OSS, regardless of their mode of entry, *i.e.,* reselling ILEC products, leasing of UNEs from the ILEC, or simply interconnecting to the ILEC's network. For, example access to OSS is necessary to order unbundled loops to be connected to a facilities-based carrier's switch, to initiate and track local number portability requests, to report and correct trouble tickets, and to receive billing data from the ILEC. A carrier's ability to provide service is materially diminished without access to the same information and support functions as the ILEC.

5. It is customary and useful to distinguish among five basic OSS systems: pre-ordering, ordering, provisioning, billing, and repair and maintenance. Business processes, such

as change management, are also critical to a new entrant's ability to process orders and other transactions after an ILEC implements a change to its OSS.

6. **Pre-ordering.** Pre-ordering is the process by which a CLEC gathers and verifies the information needed to place an order for local service. It is the first step in creating an order for local service, so any delays or errors made at the pre-ordering stage ripple through the process, causing delays and rejected orders down the line. It is also the first exposure that customers have to the CLEC, which makes it all the more important that the process run smoothly. As this Commission has recognized, meeting customer expectations for speed, efficiency, and accuracy is an important element to achieving and sustaining a competitive position in the market.

7. Pre-ordering consists of a number of key sub-functions, each of which provides information needed by the provider (whether ILEC or CLEC) to proceed with the ordering function. These sub-functions are: (a) customer service record (CSR), including feature and service availability, PIC availability, directory listings, and other informations; (b) address validation; (c) appointment availability, reservation, and cancellation; and (d) loop qualification. A brief description of the these key sub-functions follows.

8. *CSR Information*. The CSR provides the customer's basic service information, including the customer's name, service address, telephone number, current service and features, directory listing, and long distance and intraLATA carriers. This is the information needed to take and place the customer's order when the customer is migrating from an ILEC to a CLEC. Without access to the CSR, the CLEC would have to get the information from the customer himself, which is problematic for several reasons. The customer may not know or recall certain information, such as which services and features he currently has or the precise form of his

directory listing. Also, while the customer may be able to provide his mailing address, that address may differ from the service address that the ILEC uses to provide service to the customer. This is a potentially serious problem because if there is any difference in form or content between the customer address entered on a CLEC order and the service address held by the ILEC, then the order will be rejected. In addition, and equally important, customers have come to expect their local carriers to possess this information. In order to compete effectively against the ILEC, a CLEC must be able to meet these customer expectations just as the ILEC can.

9. *Address Validation*. On orders for installations of new service, when the customer does not have a CSR from which the CLEC can obtain an address, a CLEC must be able to confirm with the ILEC that the CLEC has the customer's proper service address before placing an order. The CLEC may also need to use the address validation function on migration orders if the address on the CSR is not accurate. Without a complete and valid service address, the CLEC cannot reserve a telephone number for the customer, schedule a due date for service, conduct other important pre-ordering inquiries, or create an order for service. As noted above, the address that the CLEC puts on its order must match precisely both in form and content the address information held by the ILEC for that customer or the order will be rejected.

10. *Due Date Information*. The CLEC must be able to determine what dates are available for the installation of new service and to reserve reliable due dates for when the customer will begin receiving his new service. Due dates must be provided to CLECs on an equal footing with the ILEC so that customer installations are not delayed.

11. *Loop Qualification*. Loop qualification information identifies the physical attributes of the loop plant (such as loop length, the presence of analog load coils and bridge

taps, and the presence and type of Digital Loop Carrier) that enable carrier to determine whether the loop is capable of supporting xDSL and other advanced technologies. It is critical that requesting carriers be able to make their own judgments about whether the loop is capable of supporting the advanced services equipment the requesting carrier intends to install. Otherwise, as the Commission has noted, ILECs would be able to discriminate against other xDSL technologies in favor of their own xDSL technology. Since this information enables carriers to determine technologies the loop is capable of supporting, carriers seeking to provide advanced services would be significantly impaired without it. It is necessary to have access to all the underlying loop qualification information contained in the ILEC's engineering records, plant records, and other back office systems.

12. **Ordering**. After a CLEC's sales representative has obtained the necessary pre-ordering information, including what type of phone service the customer wants, whether the customer is a new customer or a migration from the ILEC, and how the service will be provided (*i.e.*, resale, unbundled loops, or a combination of network elements), the representative must order the service through the ILEC. In addition, a CLEC must have the ability to modify and cancel orders for service as well as to correct and resend orders that have been rejected by the ILEC. Ordering and reject information must be communicated between the CLEC and the ILEC electronically, and reject messages must be complete and understandable.

13. **Provisioning**. The provisioning function has two elements: the accurate and timely issuance of status notices, and the actual installation of service by the ILEC in a timely fashion.

14. *Status Notices*. Status notifications allow the CLEC to track the progress of an order and to take proactive steps with their customers or the ILEC (in its role as the vendor) in

the event the order is in trouble. It is critical to a competing carrier's ability to compete that it receive information concerning the status of its customers' orders in substantially the same time and manner as the ILEC provides such information to its retail operations. Status notices include acknowledgment of receipt of orders, rejects or clarifications, firm order confirmations, line loss notifications, service and missed appointment jeopardies, and completion notifications. CLEC customer service representatives must be able to discuss intelligently the status of a customer's order, conveying such information as when the service will be installed, or why, and until when, service will be delayed. A CLEC that cannot provide its customers timely and accurate status notifications will be placed at a significant competitive disadvantage vis-à-vis the ILEC.

15. *Installation*. Each ILEC must work with the CLECs to develop ways of provisioning services electronically at commercially reasonable intervals. The most significant interval for OSS purposes is the interval from an ILEC's receipt of an order to its completion, that is, the time it takes to actually install service. Therefore, ILECs must provide reasonable due dates for provisioning services and must meet those dates consistently. Parity requires that it take no longer for a customer to receive service from a CLEC than it does for the customer to receive the same service from the ILEC.

16. **Maintenance and Repair**. The repair and maintenance function consists of the ability to diagnose and address customer-identified problems, as well as to prevent problems from arising by ensuring that telephone lines are in good working order. Quality maintenance and repair service is imperative to a new entrant. It is the customer's first opportunity to see how well or poorly the CLEC can maintain service. It is at this juncture where CLECs gain customer confidence or lose the game. When a CLEC is providing service via resale or UNEs, the service problems the customer experiences may be a problem in the ILEC facilities. Therefore, the

CLEC must have access to the ILEC maintenance and repair information and tools in order to diagnose and solve the customers complaint. Electronic bonding should be provided so that CLECs may interface their systems directly with the ILEC's systems to avoid the re-keying of data.

17. **Billing.** The billing function encompasses several different sub-functions, including daily usage reports that provide the information required to enable CLECs to bill their end users, and monthly bills detailing what the CLEC owes the ILEC. It is critical that a CLEC receive all types of billing information that is timely, accurate, complete, properly formatted, and verifiable. Accurate and timely billing, like responsive maintenance and repairs, is essential for maintaining customers.

18. There are three discrete billing sub-functions. First, the ILEC must provide the CLEC with records of the daily usage of CLEC customers over UNEs provided by the ILEC. These daily usage files must provide the customer call detail required for the CLEC to bill its end users for local service. Customers expect to receive bills from a CLEC that are at least as timely, accurate, and informative as the bills they had received from the ILEC. If, however, the CLEC does not receive accurate and timely bills from its primary supplier (the ILEC), it will not be able to prepare and send out accurate and timely bills to its customers.

19. Second, the ILEC must provide the CLEC with monthly wholesale billing records detailing the CLEC's use of the ILEC's network, including UNEs and collocation, and the resulting charges. These bills must charge the proper interconnection (not access) rates and must contain sufficient detail for auditing, including quantities and descriptions of each service as well as the relevant USOC codes. Late receipt of wholesale bills causes substantial harm to CLECs.

MCI audits its wholesale bills against its retail bills. If it receives the wholesale bills late, the auditing process is more difficult. Moreover, MCI cannot close its books on time.

20. Third, as part of its meet point billing arrangement with the CLEC, the ILEC must provide the CLEC with the meet point billing data necessary for the CLEC to bill and collect access charges from interexchange carriers for using the CLEC's local network to originate or terminate access calls.

21. **Business Processes.** In addition to the specific OSS interfaces, the ILECs must implement business processes that provide CLECs with the same access to the ILEC's OSS that the ILEC enjoys, including proper change management procedures, carrier-to-carrier testing processes, and help desk support. CLECs must be able to contact the ILEC wholesale order processing and electronic interface teams to resolve questions and problems. Processes must be robust enough to allow orders that fall to manual or require special handling to be processed effectively and rapidly. ILEC interface personnel must understand wholesale product offerings and be able to provide support on an equivalent level to that provided to internal ILEC personnel. Business processes must be documented and adhered to so that CLECs can receive consistent answers and support.

22. **Change Management**. Change management is essential to ensure that the ILEC's OSS is able to adapt as the telecommunications industry continues its rapid evolution. Change management is the process by which CLECs and the ILEC determine which changes are needed, and then implement those changes in such a manner that they do not have significant negative impacts on CLECs and their customers. For example, a good change management process will ensure that CLECs have sufficient notification of changes to an interface that they are able to adapt to any such change. As this Commission has recognized, change management is critical to

a CLEC's ability to process orders and other transactions after an ILEC implements a change to its OSS. If the ILEC implements a change without adequate notice, a reasonable opportunity for testing, a reasonable opportunity for CLEC input, transitional availability of recent versions, and the opportunity for the industry to halt the introduction of a "buggy" system, orders and other transactions from CLECs for their customers will fail.

Conclusion

23. This concludes my declaration on behalf of WorldCom, Inc.

<u>Declaration</u>

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April ______, 2002.

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Sherry Lichtenberg